

# INFORMATION SHEET

## An Environmental Protection Team Service

### Mosquitoes

**Class:** Insecta

**Order:** Diptera

**Genus:** Anopheles

There are over 3100 species of mosquitoes world wide. Mosquitoes are in the order Diptera and the family Culicidae. They are blood feeding insects, and their ability to act as vectors of disease has generated significant interest. More importantly, there has been an increase in populations in the UK over the past few years; therefore mosquitoes are becoming a greater public health significance in the UK.

#### Habit

Standing fresh water or brackish (salty) water provide the ideal habitats for mosquitoes to breed. However, particular species prefer different types of water and habitats.

Mosquito larvae are found in a variety of habitats, ranging from temporary floodwater to swamps, marshes, lagoons, ponds and water butts. Due to the lack of turbulent and wave action, shallow water is ideal for larval survival. Recent research suggests that mosquitoes can breed in discarded UK tyres as they provide the ideal habitat. Mosquitoes tend to travel limited distances, thus are found nearby their breeding sites. Nevertheless, they are occasionally carried miles from their breeding habitat by wind.

#### Biology

Egg – larva – pupa – adult

Eggs – laid individually and float on the surface of the water. They hatch within 48 hours.

Larvae – live in the water and breathe by coming to the surface. They shed their skin four times increasing in size following each molting. They feed on organic matter and micro-organisms in the water. The fourth molt is significant, as this is when the larva changes into a pupa.

Pupae – non-feeding, resting stage. At this stage, the mosquito turns into an adult. After two days, the adult is fully developed. Following complete development, the skin of the pupa splits and the mosquito emerges as an adult.

Adults – rest on the surface of the water for a relatively short time when newly emerged. This is to allow itself to dry and all its

parts to harden. Furthermore, the newly emerged adult cannot fly until the wings have spread out and dried properly.

The rate of development depends on temperature and species characteristics. Some species go through their whole life cycle in four days whereas others go through their whole life cycle for as long as one month.

Adult mosquitoes are thin and have a slender body. They are approximately 10 mm in length. The wings are covered in scales and the mouth is fairly long. Their development is temperature-dependent.

**Life Cycle** During their short life cycle, mosquitoes go through a complete metamorphosis. Like all insects, mosquitoes initiate from an egg. A female mosquito will lay her eggs either on flood prone soil or directly on water. The eggs hatch into larvae and the larvae develop into pupae. Adult mosquitoes will then emerge from the pupae within a week. The life cycle begins again once the adults are capable of flying and mating takes place.

### **Mosquito Control**

To control mosquitoes, it is important to control the adult stage of the life cycle, as they are the ones that bite. Modern forms of control no longer rely merely on pesticides, as some biological control methods are used, whereby specialised organisms, such as dragonflies and lizards, essentially seek out mosquitoes and either eat them or infect them with a disease that kills them. Other control methods include; propane fuel traps, mosquito specific non-toxic traps, bats and several species of insectivorous birds. The non-toxic traps rely on attracting mosquitoes.

**Diseases** Mosquitoes carry diseases and transfer them from person to person without catching the diseases themselves. As part of their eating and breeding habits, female mosquitoes suck blood from humans and other animals. When they bite, they inject saliva and anti-coagulants into the blood. Some adults have little or no reaction to the bites and others can develop an allergic reaction.

It is estimated that mosquitoes transmit disease to more than 700 million people annually in South America, Central America, Mexico, Africa and the majority of Asia. Of the 700 million people, millions die as a result of infection.

The two most common diseases are yellow fever and malaria. Yellow fever is mostly transmitted by *Aedes aegypti* mosquitoes. The malaria parasite can be found in the mosquito genus

*Anopheles*. Malaria can cause premature mortality, particularly in children under the age of five. There are approximately 2 million deaths annually.

The filariasis worm is carried by some species of mosquito. This parasite causes elephantiasis, which is a disfiguring condition exemplified by huge swelling of several parts of the body. Other viral diseases include; Rift Valley Fever, Ross River Fever, Japanese encephalitis, St. Louis encephalitis, La Crosse encephalitis, epidemic polyarthritis and West Nile virus (WNV). West Nile virus is well-known and affected almost every state in the United States by 2003, with over 3,000 cases in 2006.

Importantly, although mosquitoes in the UK are becoming a growing concern, they do not pose a significant public health hazard. This is because the indigenous population does not carry infectious diseases. That is not to say there won't be a problem in the future, given the nature of our ever changing climate; as the temperatures increase we are likely to see the emergence of 'foreign' species, and this could result in a change in common practices adopted by Local Authorities.